

Effects of Occupational Exposure to Tobacco Dust in Women Bidi Rollers

Minny Jael P. & K. Rudrama Devi*

Human Genetics & Molecular Biology Lab, Department of Zoology, Osmania University, Hyderabad

*Email: rudramadevi_k@yahoo.com

ABSTRACT: Tobacco contains nicotine which is readily absorbed by all the body tissue including the skin mucous membrane of epithelium respiratory disorders, nose and intestines. Processing of tobacco leaves generates lot of dust and liberates many volatile components of tobacco in the ambient air. In India the in-spirable dust concentrations were 150 fold higher in tobacco processing units than in general environment. In the present study to assess the intensity of occupational toxication 182 women bidi rollers were clinically examined and interview for details using standard questionnaire. All the data was subjected to statistical analysis and chi-square test. More than 75% of women are engaged in bidi rolling. Simultaneously 182 control subjects were selected with age group 15-65 years. The women bidi rollers were employed for 6-30 years. They were had the sign and symptoms of tobacco dust exposure effects on chronic Bronchitis, eye irritations, headaches, backaches, as the significant increase in Joint pains. The studies showed women bidi rollers are at high health risk group combined action of local authorities society and international bodies may help tobacco related health problems.

Keywords: Health profiles, Women bidi rollers, Telangana

1. INTRODUCTION

Tobacco-related industry is a major commercial enterprise around the world. Over the years, production and consumption of tobacco products has alarmingly increased throughout the world. In India, more than five million individuals are involved in the production of bidi [a raw form of cigarette]. These individuals work in small factories or at household-based enterprises in an environment laden with tobacco dust. Individuals working six to 10hrs/day inhale, swallow, and expose their skin and mucous surface to significant amounts of particulate tobacco. The constituents of tobacco get absorbed into the body, get bio-activated and result in increased risk of developing ailments for which tobacco consumption is a major risk factor, including chronic obstructive

pulmonary disease,

cardiovascular system abnormality, carcinomas and premature death. Although the potential of the above diseases exists among workers of the tobacco industry, little information is available about the adverse ocular health effects of this exposure among bidi-workers. Occupational research is seen as more complex issue in India which includes child labor, poor industrial legislation vast in formal sector, less attention to industrial hygiene and poor surveillance data across the country. Occupational health studies in tobacco workers, an elevated levels of nicotine was observed in urine samples that were causing severe physical problems [1]. Incidence of respiratory tract problems were higher in Aligarh lock factory workers [2]. In a retrospective epidemiological study conducted in South eastern coal mines showed the occurrence of pneumoconiosis was about 3% in India [3]. Further Jyosna reported higher incidence of respiratory tract health problems due to coal dust inhalation. Occupational health problems causing health problems are elevated in exposed to lead based paints [4]. Hence in the present investigation the health effects of women exposed to tobacco dust were investigated in Warangal, Nizamabad & Adilabad districts of Telangana state, India.

1. MATERIALS AND METHODS

2.1 Study population

The tobacco exposed group comprising of 182 workers out of 600 employees in the industries having duration of services ranging from 16-66 years who worked for 8 h/per day were selected. The workers were further divided into groups based on the duration of exposure, life style, diet, socio-economic status and habits such as smoking of bidi or cigarette, Chewing of tobacco with lime or with betel quid. For comparison, 182 age matched subjects belonging to same socio-economic group as that of workers were selected to serve as control subjects who are not exposed to any toxic chemicals. Various symptoms such hypertension, chronic bronchitis, eye irritation, headache, backache, asthma, fatigue, skin allergy, joint pains were recorded for the study in control and exposed

population. The data was analyzed by Chi-square test.

2.2 Sample Collection:

5ml of the blood samples were collected aseptically in sterile heparinized vacutainers and brought to the laboratory in an ice bath. The samples were brought to the room temperature prior to setting up the culture and were coded till experimental use.

2.

RESU

LTs AND DISCUSSION

In the present study, the health profiles were made using standard questionnaire in 182 women bidi rollers of Warangal, Nizamabad & Adilabad districts and in 182 control subjects belonging to age group 15 to 65 Yrs. Various symptoms such as hypertension chronic bronchitis, eye irritation, headache, backache, asthma, fatigue, joint pains were recorded for the study. The percentage of health problems like chronic bronchitis [7.69%], eye irritation [12.82%], backache [12.80%], asthma [8.9%], skin allergy [10.25%] and joint pains [23.67%] were higher in bidi rollers exposed to tobacco dust through inhalation against the complaints found in general population [control group], the differences in percentage of Health profiles between control and exposed groups were analyzed statistically using Chi-square test.

A study in assam reveals that affected paddy field workers develop exanthema on the exposed parts of their skin mainly legs and arms when they come in contact with water and rice fields [5]. A very high respiratory morbidity was recorded in mango plantation workers exposed to prolonged inhalation of organic dusts during the farming operation [6]. Further an increase in the deterioration of lung function was observed in Tamil nadu among asbestos exposed workers in a manufacturing unit [7]. Adult carpet weavers in Mirzapur also reported respiratory problems as major occupational risk who are exposed to carpet dust particles [8]. Further as child labour is high in India, the children employed carpet industry in Jaipur city showed acute respiratory problems compared to normal children live in same community which is associated with cotton dust [9].

Among working children acute physical pains were recorded in leather industry exposed to glue and solvents [10]. The health problems like coughing, sore throat, dizziness, methemoglobinemia and anemia are common effects of ingestion and inhalation of chlorate dust in child labor of sivakasi [11]

Evidence from cohort study conducted on health care providers in Telangana shown an association between occupation [hospital staff] and incidence of malaria. The risks are four fold in nursing students and two fold among medical students than well trained doctors [12], due lack of precautions. Elevated risks of hepatitis B infections were reported in hospital personnel in West Bengal [13]. A study based on traffic policemen showed respiratory tract problems exposed to benzene from six major towns of north India [14]. Urinary cotinine was measured in bidi rollers and control subjects as an index of tobacco specific exposure while the concentration of urinary thioethers was determined to a certain exposure to electrophilic moieties. Detection of cotinine in urine samples from bidi rollers with no tobacco habit indicated occupational exposure leads to cutaneous absorption of tobacco constituents and the resultant increase in exposure to alkylating agents was evident from elevated urinary thioether levels [15]. The present results are comparable with that of Gopal [16] who highlighted the issues of occupational health of women workers within home based bidi industry through a case study from a block of the Tenkasi Taluk of Tirunelveli districts .The data presented was unpublished thesis of Survey of 237 home based women bidi workers . There were nearly 5.5 lakh women bidi rollers .The women worked without or leisure had poor food habits, health problems. The women commonly suffered from physical ailments .Five main symptoms groups were seen among women workers.1] Aches and pains related to bidi work such as backache , burning pain in eyes ,pain in legs and numbness in fingers were reported by 65% of respondents , 2] cough s were 9.7%, 3] stomach related pains 8.4% , 4]giddiness, dizziness, joint pains ,white discharge , swelling ,fever were common. Bidi work penetrates into possible and available time in women's lives at the cost of their health. Further Chatlapadhyay [17] reported pulmonary functional impairments the male bidi rollers. It was found that constant exposure to tobacco dust led to cough, breathlessness, morning cough, chest, tightness, a trend of decreased lung volumes, correlated with age increment and duration of work exposure. Further various health hazards were reported in bidi workers. The absorption of nicotine induces oxidative stress among bidi workers. Chronic nasal inhalation of tobacco dust and cutaneous absorption of tobacco alkaloids such as nicotine increase risk of cancer, lung diseases and other health related problems. Other studies have revealed that tobacco dust exposure induces DNA mutation and damage [18].

Table 1:Summary of clinical data

Health complaint s	Warangal		Nizamabad		Adilabad	
	Control s	Exposed	Control s	Exposed	Control s	Exposed
No.of	61	61	58	58	63	63

subjects						
Hemoglobin Hb [g/100ml]	13.23±0.45	11.08±0.92	14.23±0.65	13.16±1.02	14.28±0.65	11.16±0.92
Hypertension	11(18.03)	14(22.95)	10(17.24)	13(22.41)	11(17.46)	18(28.57)
Chronic bronchitis	6 (9.83)	12 (19.67)	9 (15.5)	16 (27.58)	12 (19.04)	22 (34.92)
Eye irritation	14 (22.95)	20 (32.78)	11 (18.96)	24 (41.37)	9 (14.28)	27 (42.85)
Headache	12 (19.67)	14 (22.95)	10 (17.24)	18 (31.03)	11 (17.46)	17 (26.98)
Backache	15 (24.59)	20 (32.78)	9 (15.5)	16 (27.58)	5 (7.93)	29 (46.03)
Asthma	9 (14.75)	15 (24.59)	6 (10.34)	13 (22.41)	8 (12.69)	18 (22.57)
Skin allergy	10 (16.39)	16 (26.22)	8 (13.79)	19 (32.75)	10 (15.87)	20 (31.74)
Fatigue	14 (22.95)	20 (32.78)	12 (20.68)	18 (31.03)	16 (25.39)	22 (34.92)
Joint pains	12 (19.67)	30 (49.18)	10 (17.24)	28 (48.27)	12 (19.04)	36 (57.14)

Values in parenthesis are percentages *P<0.05

ACKNOWLEDGEMENTS

Authors are thankful to Ministry of Environment and Forests [MOEF], Govt. of India, New Delhi for providing the financial assistance and to Prof. N. Sree ram Kumar, Former Head, Department of Zoology for providing laboratory facilities.

REFERENCE

- Ghosh S K Parik J R, Gokani V N Kashyap S K Chatterjee S K (1979); *J Occup Med* 21, 45-7.
- Hasan M A Khan Z, Yunus M Bhargava R (2000); *Indian J public health*; 46;39-45.
- Parihas Patnaik J P Nema B K Sahoo G B Misra Adhikarys (1997); *Ind. Health* 35, 467-73.
- Madhavi D., Devi K. R., Rao K. K., Reddy P. P. (2007); *J. En. Biol.* 28(1) 115-117.
- Narain K, Mahanta J, Dulta P Paddy (1994). *Field dermatitis in Assam A cercarial dermatitis J. Comm. Dis* 26, 26- 30.
- Gupta B N Mathur N Rastogi S K Srivastava A K Chandra H.

Pangley B S (1995). *Socio economic environmental health problems of farm workers engaged in mango plantation. Biomed Environ. Sci.* 8:8 301-9.

vii. Gautham A K, Yunus M, Rahman A, Reddy S S (2003). *Environmental monitoring of asbestos products manufacturing units a case study Ind. J. Env. Health*; 45 289-92.

viii. Das P K, Sukla K P Ory F G. (1992). *An occupational health problem in adults and children in carpet weaving industry Mirzapur India. A case study Soc. Sci. Med* 35 1293-302.

ix. Joshi S K Sharwa U Sharma P Pathak S S Sitaramn S, Verma C R (1994). *Health status of carpet weaving children Indian Pediatr.* 31, 571-4.

x. Mitra S (1993). *Factor a study of health conditions in environment of child labour . Br. J Ind. Medicine* 50,938-40.

xi. Sekhar H R (1992). *Children at risk ICCW New Bulletin*: 40, 50-9.

xii. Rajasekhar M Nanda Kumar N V (2000). *Occupational malaria and health risk among select occupational health care employee group in urban hospital Tirupathi A. P. Andian J Malariorol* 3757-60.

xiii. Baitacharya S Dalal B S Baitacharya I Lahari (2001). *A Hepatitis B viral infections amongst hospital personnel in calcuill Indian Public Health.* 45: 135-6.

xiv. Verma Y, Kumar A Rana S V (2003). *Biological monitoring of exproso to Benzene to traffic policemen of north India. India Health* 23. : 41-260-4.

xv. Govikar R. B. & R. A. Bhisey (1992). *Eleveated urinary thio either excretion among bidi rollers exposed occupationally to processed tobacco. In International Archives of Occupational Environment Health Vol. 64 No.2 pp 101-104.*

xvi. Gopal Meena (2000). *Health of women workers in beedi Industry is Medico Friends circle bulletin Jan-Feb 2000.*

xvii. Chattopadhyay B P (2006). *A Study to assess the respiratory impairments among the male bidi workers. In Indian Journal of Occupational and Environment Health Vol. 10(2) pp 69-73 Kolkata India.*

xviii. Swami S et al (2006). *Absorption of nicotine induces oxidative stress among bidi workers in Indian Journal of Public Health Vol. 50(4) pp 231-235.*